

JAN 20 2000

1... Good Evening. My name is Beatrice Buder Clemens. I live at 100 Arundel
Place, St. Louis, MO, 63105. I thank you for the opportunity to voice my concerns. [We
2 know so little about radioactivity. I urge the government to leave the waste generated
thus far where it is and to cease the formation of additional radioactive waste until our
scientists have discovered how to make the waste safe for transportation.] The hazards
posed by exposure to radioactivity become more clear all the time. Just within the last
ten years scientists have been able to better define that threat. Articles have appeared
in numerous publications including the American Nuclear Society's Nuclear News ,
the New York Times, NewScientist, and the top scientific journal in England, Nature .
The main hazard I wish to highlight in this brief comment period is explained in depth
in the February 20, 1992 edition of Nature magazine. The process I refer to is called
radiation-induced genomic instability which I will attempt to explain here.

The headlines read: "Radiation may damage DNA without hitting the cell ;"
"Radiation Roulette;" and "Alpha- particle After Effects. " These reports are based in
part on research done at the Los Alamos National Laboratory funded by the U.S.
Department of Energy. The unthinkable but not impossible transportation accident
would expose people to plutonium and therefore alpha particles. How you can know
of the power of alpha radiation and even consider moving radioactive waste all around
the country is beyond me. For those outside of the DOE who may not have followed
these studies let me try to paraphrase them.

Prior to the 1990's scientists identified three possible effects of exposure to
radiation: 1) the cell is unharmed; 2) the cell is killed; 3) the cell's DNA is damaged.
The fourth possibility is this radiation-induced genomic instability, meaning that the
damage to the cell does not show up until after the cell has divided several times. In
other words, alpha particles emitted by radioactive plutonium have been known at
least since 1992 to cause abnormalities in some cells several generations of cell
division after the initial exposure. This is different from the immediate genetic damage

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long known to be caused by any number of radioactive particles or rays. Again, this delayed mutation effect can show up in cells thought to be undamaged by initial radiation.

Suddenly diseases that show up years after exposure have a plausible and direct explanation. Previously much data on disease clusters was discounted as improbable, indirect or irrelevant. One of the articles I read suggested birth defects, cancers, immunity disorders, as well as brain disorders such as Alzheimer's and Parkinson's Disease could conceivably be explained using this newly discovered effect of radioactivity. Quite a list. Perhaps the next decade will uncover half a dozen other ways radioactivity can kill us.

For instance, there is evidence that the DNA of cells nearby to those exposed sometimes show damage. The previous assumptions were that damage was limited to only those cells directly and immediately irradiated. Because you funded some of this research you already know that disease can appear much after an individual is exposed or even later in an individual's offspring.

The logical next step is for you to change your models for acceptable exposure. This must occur before moving your radioactive waste around. Even better would be to cease production of this unbelievably hazardous stuff. Radiation is invisible and its ways still mysterious, but this much has been said (I quote Bruce Lehnert of the Los Alamos Cell and Molecular Biology Group in the September 1997 American Nuclear Society's Nuclear News) "Current ...models upon which environmental standards for ... exposure are derived now require serious reconsideration."

In 1995 30 radiobiologists and health specialists from around the world gathered in Helsinki for a workshop on the public health aspects of radiation-induced genomic instability. They cite 26 studies which, they say, suggest that the accepted rules about how to calculate the biological impact of radiation should be rewritten. "Genomic instability changes our way of thinking about how radiation damages cells

2 cont. and produces mutations," said Jack Little, professor of radiobiology at the Harvard School of Public Health in Boston, who attended the Helsinki workshop.]

1 cont. [The time will come when you can dismiss the scientists no longer. When the billions of dollars gone subsidizing the nuclear power industry will make sense no longer, even to you. Moving radioactive waste around is not the answer. You will not be burying the problem in the sands of Yucca Mountain, but only your heads. Even if transportation were to be achieved without incident, the radioactivity would only be moved, not removed. I am not a scientist; I am an accountant . Listen to the scientists before it is too late.]